AMENDMENTS TO THE CLAIMS

1. (Currently Amended): A self-contained ~~programmable electronic radio system~~ multifunction slice comprising:

an antenna interface;

a plurality of bidirectional transceivers, wherein each of the transceivers is operable over a wide band of frequencies in order to support a wide range of radio function frequencies;

a programmable processor coupled to said plurality of transceivers, to control operation of the transceivers and to process data transmitted and data received through the transceivers and operable to support at least two independent radio function threads through said plurality of transceivers; and

an avionics interface including an avionics network input for receiving data to be transmitted through the transceivers and a avionics network output for data received from the transceivers, wherein

the self-contained multifunction slice is combinable with other identical multifunction slices to form a programmable electronic radio system capable of performing a desired set of radio functions.

2. (Currently Amended): The ~~electronic radio system~~ self-contained multifunction slice of claim 1, wherein said processor is operable to perform a digital signal processing function selected from the group consisting of modulation, demodulation, encoding/decoding, detection, encryption and decryption.

3. (Currently Amended): The ~~electronic radio system~~ self-contained multifunction slice of claim 1, wherein said at least two radio function threads support radio functions selected from the group consisting of communication, navigation, interrogation, and surveillance.

4. (Currently Amended): The ~~electronic radio system~~ self-contained multifunction slice of claim 1, wherein said at least two radio function threads support radio functions selected from the group consisting of voice radio communication, data network communication, electronic navigation aids, radio beacon detection, global and local grid positioning system detection, and friend-or-foe identification challenging and responding.

5. (Currently Amended): The ~~electronic radio system~~ self-contained multifunction slice of claim 1, wherein said antenna interface couples externally the multifunction slice to a plurality of antenna preconditioning units.

6. (Currently Amended): A multifunction electronic radio system comprising:

a plurality of identical and combinable electronic radio system multifunction slices, wherein each of said plurality of identical and combinable electronic radio system multifunction slices comprises:

an antenna interface;

a plurality of bidirectional transceivers coupled to said antenna interface, wherein each of the transceivers is operable over a wide band of frequencies in order to support a wide range of radio function frequencies;

a programmable processor coupled to said plurality of transceivers and operable to support at least two radio function threads through said plurality of transceivers; and

a data interface coupled to the programmable processor and including a data input for receiving data to be transmitted through the transceivers and a data output for outputting data received from the transceivers;

wherein at least one of said transceivers is coupled to said antenna and said interface;

wherein the plurality of identical and combinable multifunction slices implements a predetermined set of radio functions.

7. (Original): The multifunction electronic radio system of claim 6, further comprising a plurality of antennas, each of said antennas being coupled to an antenna preconditioner.

8. (Original): The multifunction electronic radio system of claim 7 wherein each of said antenna preconditioners is coupled to at least one of said electronic radio system multifunction slices.

9. (Currently Amended): The multifunction electronic radio system of claim 6, further comprising a general input/output structure that delivers information to and receives information from the multifunction electronic radio system, through the ~~network~~ data interfaces of the electronic radio system multifunction slices.

10. (Previously Presented): The multifunction electronic radio system of claim 6, wherein:

each of said electronic radio system multifunction slices further comprises at least one inter-slice network bus connector, to facilitate interconnection of multiple slices; and

at least two of said electronic radio system multifunction slices are interconnected to form a radio network bus electrically isolated from the transceivers.

11. (Currently Amended): A method of implementing a multifunction electronic radio system, the method comprising:

determining a set of radio functions to be performed by said multifunction electronic radio system;

assigning the radio functions in said set of radio functions across a plurality of identical and combinable electronic radio system multifunction slices that each include:

an antenna interface;

a plurality of bidirectional transceivers, each of which is operable over a wide band of frequencies in order to support a wide range of radio function frequencies;

a programmable processor coupled to said plurality of transceivers and operable to support at least two radio function threads through said plurality of transceivers; and

a data interface, including a data input path for data to be transmitted through the transceivers and a data output path for data received from the transceivers;

interconnecting the antenna interfaces of said plurality of identical and combinable electronic radio system multifunction slices to a plurality of antenna preconditioners; and

coupling the data interfaces of said plurality of identical and combinable electronic radio system multifunction slices to a general input/output structure that delivers information to and receives information from the multifunction electronic radio system.

12. (Original): The method of claim 11, further comprising the step of configuring the processor for encryption and decryption functions.

13. (Original): The method of claim 11, wherein the step of assigning further comprises assigning the radio functions in accordance with resource assets required by the radio functions.

14. (Previously Presented): The method of claim 13, wherein the step of assigning further comprises assigning the radio functions in accordance with antenna, transceiver, and processor resource assets required by the radio functions.

15. (Original): The method of claim 11, further comprising the step of determining mission segments and mission segment radio functions, and wherein the set of radio functions includes the mission segment radio functions.

16. (Currently Amended): A multifunction aircraft radio system, said system comprising:

a plurality of identical and combinable multifunction radio slices for implementing radio functions, said plurality of identical and combinable multifunction radio slices programmable for a plurality of radio functions, wherein each of said plurality of identical and combinable multifunction radio slices comprises:

an antenna interface;

at least one bidirectional transceiver coupled to said antenna interface, said at least one transceiver being operable over a wide band of frequencies in order to support a wide range of radio function frequencies;

a programmable processor, said processor coupled to said transceiver and operable to support radio function threads using said transceiver; and

an avionics network interface including an avionics network input for data to be transmitted through ~~the transceivers~~ said transceiver and an avionics network output for data received from ~~the transceivers~~ said transceiver;

a plurality of antennas for transmitting and receiving signals, said plurality of antennas switchably coupled to said plurality of identical and combinable multifunction radio slices; and

an avionics network for delivering information between said aircraft radio system and aircraft avionics, said avionics network being switchably coupled to said plurality of identical and combinable multifunction radio slices.

17. (Cancelled)

18. (Previously Presented): The system of claim 16, wherein the programmable processor in one of the multifunction radio slices is designated as a master processor for coordinating operation of the slices, including selecting and interconnecting said plurality of radio functions.

19. (Previously Presented): The system of claim 16, wherein said plurality of multifunction radio slices may be reprogrammed in real time to accommodate a plurality of radio functions.

20. (Previously Presented): The system of claim 16, wherein said plurality of radio functions may be implemented using a minimal allocation of said plurality of multifunction radio slices.

21. (Previously Presented): The electronic radio system multifunction slice of claim 1, and further comprising:

at least one inter-slice network bus connector, to facilitate interconnection of multiple slices.

22. (Previously Presented): A multifunction electronic radio system as defined in claim 6, wherein:

each of the electronic radio system multifunction slices further comprises at least one inter-slice network bus connector; and

the multifunction electronic radio system further comprises a radio network bus interconnecting the electronic radio system multifunction slices.

23. (Previously Presented): A multifunction electronic radio system as defined in claim 6, and further comprising an external control bus coupled to the programmable processor of at least one of the electronic radio system multifunction slices, to facilitate transmission of control signals directly to radio system components external to the slice.

24. (Previously Presented): The method of claim 11, and further comprising:

interconnecting the plurality of electronic radio system multifunction slices over an inter-slice radio network bus, to facilitate communication between the slices.

25. (Previously Presented): The method of claim 24, and further comprising:

transmitting control signals between the programmable processors of the electronic radio system multifunction slices, over the inter-slice radio network bus coupled to the programmable processors.

26. (Previously Presented): The method of claim 11, and further comprising:

directly controlling electronic radio system components external to a multifunction slice by transmitting control signals over an external bus coupled to the programmable processor of at least one of the electronic radio system multifunction slices.

27. (Previously Presented): A multifunction aircraft radio system as defined in claim 16, wherein:

each of the electronic radio system multifunction slices further comprises at least one inter-slice network bus connector; and

the multifunction electronic radio system further comprises a radio network bus interconnecting the electronic radio system multifunction slices, to facilitate communication between the slices.

28. (Previously Presented): A multifunction aircraft radio system as defined in claim 16, and further comprising an external control bus coupled to the programmable processor at least one of the electronic radio system multifunction slices, to facilitate transmission of control signals directly to aircraft radio system components external to the slice.

29. (New): A self-contained multifunction slice as defined in claim 1, wherein the self-contained multifunction slice and the other identical multifunction slices are each capable of performing any of the desired set of radio functions.

30. (New): A multifunction electronic radio system as defined in claim 6, wherein each of the plurality of identical and combinable electronic radio system multifunction slices is capable of performing any of the predetermined set of radio functions.

31. (New): The method of claim 11, wherein the assigning of the radio functions in said set of radio functions across a plurality of identical and combinable electronic radio system multifunction slices comprises assigning the radio functions across a plurality of identical and combinable electronic radio system multifunction slices, each of which is capable of performing any of the radio functions.

32. (New): A multifunction aircraft radio system as defined in claim 16, wherein each of said plurality of identical and combinable multifunction radio slices is capable of performing any of the plurality of radio functions.

33. (New): A self-contained multifunction slice as defined in claim 1, wherein the plurality of bidirectional transceivers comprises a plurality of identical bidirectional transceivers.

34. (New): A multifunction electronic radio system as defined in claim 6, wherein the plurality of bidirectional transceivers comprises a plurality of identical bidirectional transceivers.

35. (New): The method of claim 11, wherein the plurality of bidirectional transceivers comprises a plurality of identical bidirectional transceivers.

36. (New): A multifunction aircraft radio system as defined in claim 16, wherein said at least one bidirectional transceiver comprises a plurality of identical bidirectional transceivers each coupled to said antenna interface and each being a single module operable over a wide band of frequencies in order to support a wide range of radio functions.